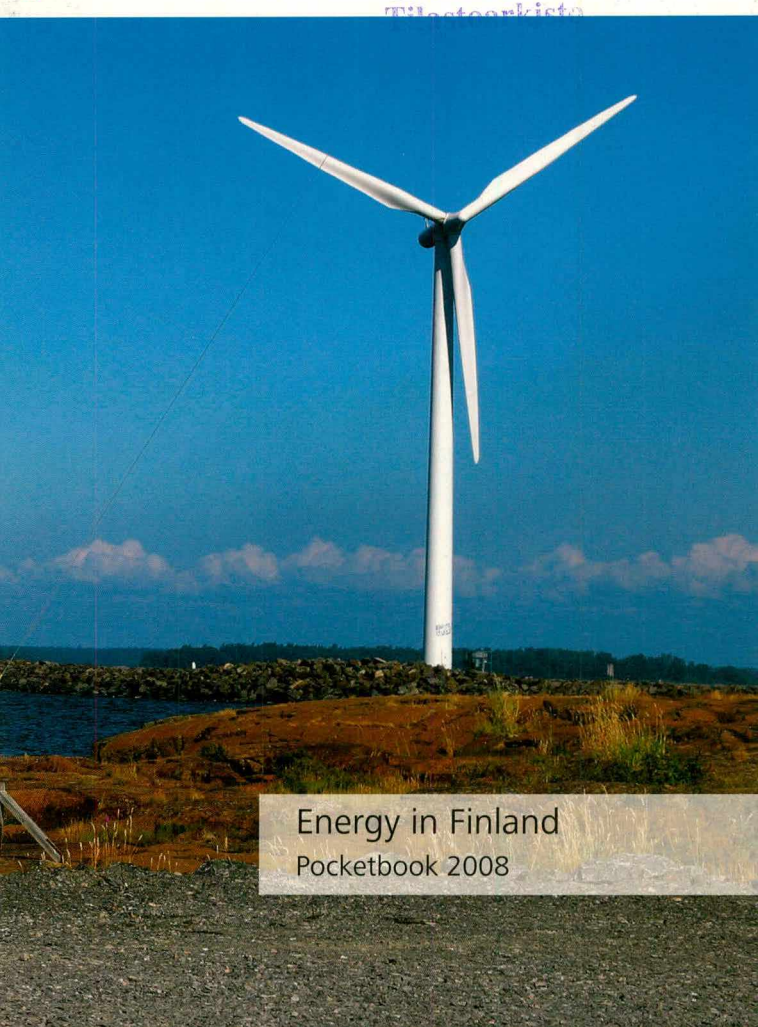
Statistics Finland



Energy in Finland

Pocketbook 2008

Finland in brief

Area

Situated in northern Europe with an area of 338,145 km^2 of which 78% forest, 10% water, 8% cultivated land.

Population

5.3 million, with average density of 17 persons per square kilometre. More than two-thirds of the population reside in the southern third of the country.

Natural resources

Average temperatures

Town	Latitude	January	July
Helsinki	60°	–4.2°C	+17.2°C
Rovaniemi	66°	–11.7°C	+14.9°C

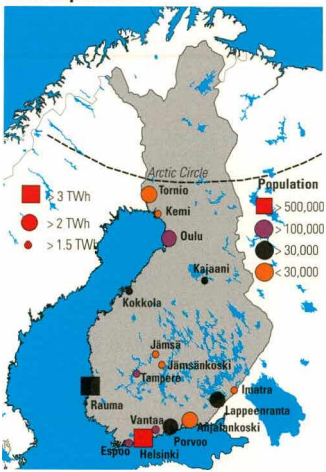
Economy

In 2007 GDP totalled € 179 bil., i.e. € 33,803/capita. In 2006 services were 50.8%, secondary production 46.9% and primary production 2.4% of the GDP.

Structure of industry, Value added gross in production in 2006

	bil. €	%
Total industry	**34.7**	**100**
Mining and quarrying	0.4	1
Wood and paper industry	4.9	14
Chemical industry	3.7	11
Metal industry	16.3	47
Machinery and equipment	4.9	14
Electrical equipment	7.5	22
Other metal industry	3.9	11
Other manufacturing ind.	6.5	19
Electricity, gas and water ind.	2.9	8

Municipalities with high electricity consumption 2007



Productive forestland is the most valuable natural resource of Finland. The indigenous energy resources in the country are hydro power, wood and peat. Finland also has some rich deposits of metallic ores from which copper, zinc, iron, and nickel are extracted.

Total energy consumption in 2007*

1,481 PJ (35.4 Mtoe)
280.6 GJ/capita (6.7 toe/capita)

Electricity consumption in 2007*

90.3 TWh
17,109 kWh/capita

Contents

The data in this pocketbook are based on the Preliminary Energy Statistics 2007 figures.

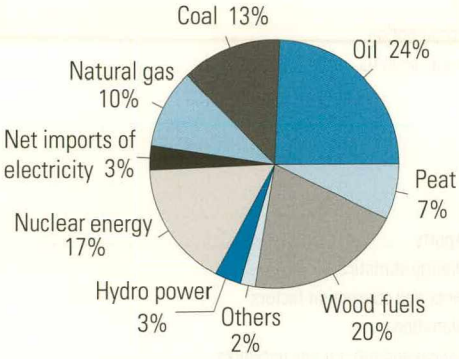
Inquiries:
Kirsi-Marja Aalto
+358 9 1734 3442
energia@stat.fi
http://www.stat.fi/energia

Cover photograph: Oy Turku Energia – Åbo Energi AB/Esko Keski-oja

ISSN 1457–0491
ISBN 978-952-467-854-4

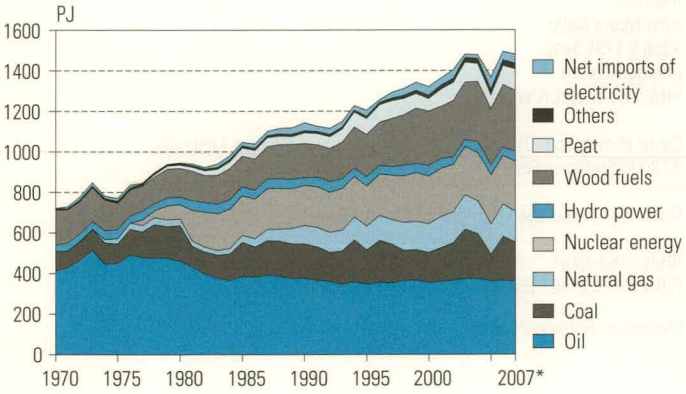
Multiprint, Helsinki 2008

Total energy consumption by energy source 2007

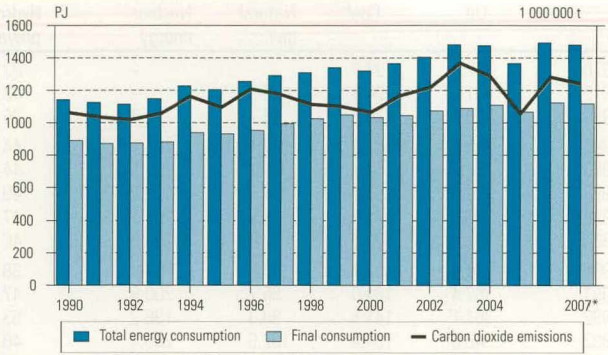


Total energy consumption in 2007* was 1 481 PJ.

Total energy consumption by energy source 1970–2007

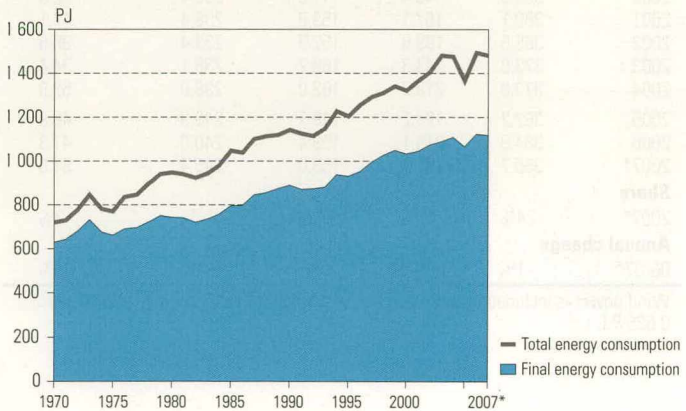


Final energy consumption by sector 2007



Final energy consumption in 2007* was 1 118 PJ.

Total energy consumption and final energy consumption by sector 1970–2007



Total energy consumption by energy source, PJ

	Oil	Coal	Natural gas	Nuclear energy	Hydro power
1970	412.9	94.8	–	–	33.9
1975	451.0	94.8	26.5	–	43.5
1980	460.3	176.2	32.2	72.3	36.4
1985	385.3	167.8	34.1	196.1	44.0
1986	382.1	147.7	41.3	196.3	44.2
1987	391.6	168.5	54.6	202.2	49.2
1988	385.9	172.7	58.8	201.2	47.6
1989	375.0	170.1	77.0	196.5	46.4
1990	377.8	167.1	90.8	197.8	38.7
1991	367.4	164.0	95.7	200.8	47.0
1992	361.1	141.5	99.3	198.2	53.9
1993	345.8	164.4	102.6	205.1	48.0
1994	359.2	205.2	113.3	199.9	42.0
1995	347.1	167.1	117.6	197.8	46.1
1996	356.3	205.5	123.1	203.8	42.2
1997	353.2	190.0	121.1	218.7	42.5
1998	364.6	147.1	138.7	228.8	53.3
1999	366.7	148.9	138.9	240.7	45.3
2000	353.6	148.4	141.9	235.4	52.3
2001	360.1	167.1	153.9	238.4	47.1
2002	365.5	183.6	152.9	233.4	38.5
2003	373.9	243.3	169.2	238.1	34.4
2004	373.8	219.0	163.0	238.0	53.9
2005	362.2	129.2	149.1	243.9	48.9
2006	364.9	216.1	159.4	240.0	41.3
2007*	360.7	191.1	153.0	245.4	51.0
Share					
2007*	24%	13%	10%	17%	3%
Annual change					
06/07*	–1%	–12%	–4%	2%	24%

Wind power is included in hydro power. Total amount of wind power in 2007 was 0.686 PJ.

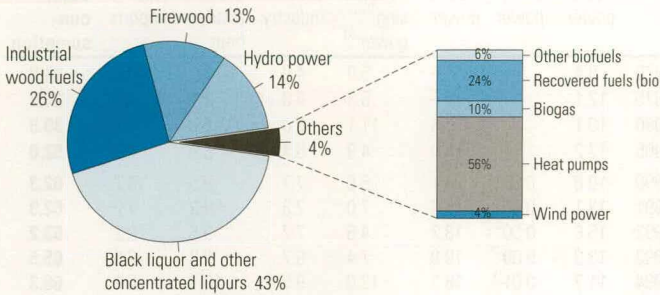
Total energy consumption

Wood fuels	Peat	Others	Net imports of electricity	**Total**	
170.1	0.9	6.0	1.9	**720.5**	1970
130.7	1.7	7.2	14.4	**769.8**	1975
142.1	17.1	6.3	4.4	**947.2**	1980
151.3	41.1	10.3	17.0	**1 047.0**	1985
152.5	43.3	10.1	20.9	**1 038.5**	1986
158.4	45.4	10.2	20.1	**1 100.3**	1987
167.7	41.5	10.6	26.6	**1 112.5**	1988
172.0	39.5	10.5	31.9	**1 119.0**	1989
167.2	53.3	10.8	38.7	**1 142.1**	1990
158.6	56.0	10.1	25.9	**1 125.4**	1991
161.2	58.7	10.7	29.6	**1 114.2**	1992
180.5	64.5	9.9	27.1	**1 148.1**	1993
201.8	73.7	10.1	21.9	**1 227.0**	1994
207.5	79.4	11.0	30.3	**1 203.8**	1995
212.8	87.5	11.1	13.2	**1 255.5**	1996
237.2	88.0	13.3	27.6	**1 291.6**	1997
247.6	80.7	15.2	33.5	**1 309.7**	1998
273.2	71.8	15.6	40.0	**1 341.1**	1999
268.6	61.9	16.4	42.8	**1 320.7**	2000
258.5	85.9	18.7	35.9	**1 365.6**	2001
278.4	89.7	19.8	42.9	**1 404.7**	2002
283.5	99.2	22.4	17.5	**1 481.5**	2003
297.4	88.8	24.7	17.5	**1 476.2**	2004
275.5	68.8	27.5	61.3	**1 366.4**	2005
309.0	93.6	28.2	41.0	**1 493.7**	2006
300.0	106.0	28.4	45.2	**1 480.8**	2007*
					Share
20%	7%	2%	3%	**100%**	2007*
					Annual change
–3%	13%	0%	10%	–1%	06/07*

Renewable energy, PJ

	Hydro power	Wood fuels in industry and energy production	Black liquor and others	Small scale combustion of wood	Recovered fuels (bio fraction)	Heat pumps	Others	**Total**	Share of total energy consumption
1970	33.9	20.2	57.7	92.2	..	..	..	**204.0**	28%
1975	43.5	14.8	48.3	67.6	..	..	..	**174.3**	23%
1980	36.4	31.1	67.4	43.6	..	0.7	..	**179.2**	19%
1985	44.0	31.6	75.5	44.1	..	2.6	..	**197.8**	19%
1986	44.2	31.1	77.2	44.2	..	2.3	..	**199.0**	19%
1987	49.2	32.4	81.6	44.4	..	2.6	..	**210.1**	19%
1988	47.6	35.0	88.1	44.5	..	2.3	0.0	**217.6**	20%
1989	46.4	36.3	91.1	44.6	..	2.0	0.0	**220.5**	20%
1990	38.7	36.5	86.1	44.7	0.3	2.2	0.0	**208.4**	18%
1991	47.0	32.9	80.9	44.8	0.3	2.4	0.0	**208.4**	19%
1992	53.8	32.8	83.5	44.9	0.4	2.4	0.0	**217.8**	20%
1993	48.0	40.4	95.1	45.0	0.3	2.5	0.0	**231.4**	20%
1994	42.0	52.4	104.4	45.0	0.3	2.6	0.0	**246.7**	20%
1995	46.0	53.9	109.0	44.7	0.3	2.5	0.7	**257.1**	21%
1996	42.1	56.2	109.6	46.9	0.3	2.7	0.7	**258.7**	21%
1997	42.5	61.6	128.5	47.0	0.5	2.8	0.9	**283.7**	22%
1998	53.2	64.7	135.4	47.6	1.1	3.0	0.9	**305.9**	23%
1999	45.2	84.0	142.6	46.6	1.4	3.1	1.1	**323.9**	24%
2000	52.0	84.9	137.9	45.3	1.9	2.9	1.4	**326.4**	25%
2001	46.9	83.9	126.7	47.8	2.5	3.7	1.2	**312.8**	23%
2002	38.2	89.6	140.1	48.7	2.4	4.1	1.5	**324.6**	23%
2003	34.0	93.7	141.2	48.7	3.2	4.6	2.2	**327.6**	22%
2004	53.5	100.8	148.2	48.5	3.6	5.6	2.6	**362.7**	25%
2005	48.3	95.2	132.1	48.2	4.5	6.6	3.2	**338.1**	25%
2006	40.7	103.9	156.0	49.1	3.8	8.6	3.1	**365.3**	24%
2007*	50.3	95.0	157.0	48.0	..	..	..	**366.1**	25%

Renewable energy 2007

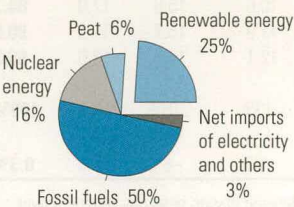


Data on the sector 'Others' are based on 2006 figures

The total consumption of renewable energy in 2007* was 366 PJ which is 25% of total energy consumption.

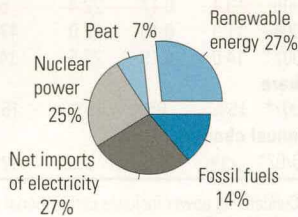
Renewable energy 2007

In total energy consumption



Total* 1 481 PJ

In electricity supply



Total* 90 TWh

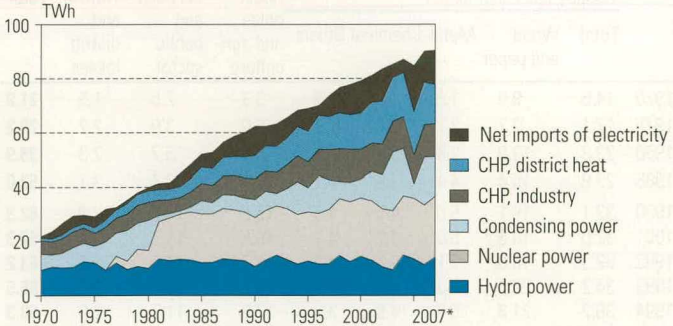
Supply and total consumption of electricity, TWh

	Hydro power	Wind power	Nuclear power	Condensing power [1]	CHP industry	CHP district heat	Net imports	**Total consumption**
1970	9.4	–	–	5.9	4.9	1.0	0.5	**21.8**
1975	12.1	–	–	6.3	4.8	2.1	4.0	**29.2**
1980	10.1	–	6.6	11.1	6.6	4.2	1.2	**39.9**
1985	12.2	–	18.0	4.9	6.4	5.9	4.7	**52.0**
1990	10.8	0.00	18.1	6.6	7.7	8.5	10.7	**62.3**
1991	13.1	0.00	18.4	7.0	7.3	9.3	7.2	**62.3**
1992	15.0	0.00	18.2	4.6	7.7	9.5	8.2	**63.2**
1993	13.3	0.00	18.8	7.4	8.7	9.8	7.5	**65.5**
1994	11.7	0.01	18.3	12.0	9.5	10.7	6.1	**68.3**
1995	12.8	0.01	18.1	8.9	9.5	11.3	8.4	**68.9**
1996	11.7	0.01	18.7	13.8	9.7	12.5	3.7	**70.0**
1997	11.8	0.02	20.1	10.9	10.9	12.3	7.7	**73.6**
1998	14.8	0.02	21.0	6.3	12.0	13.2	9.3	**76.6**
1999	12.5	0.05	22.1	7.2	12.0	12.8	11.1	**77.8**
2000	14.5	0.08	21.6	6.9	10.8	13.4	11.9	**79.2**
2001	13.0	0.07	21.9	10.8	10.4	15.1	10.0	**81.2**
2002	10.6	0.06	21.4	12.4	11.3	15.8	11.9	**83.5**
2003	9.5	0.09	21.8	21.5	11.3	16.2	4.9	**85.2**
2004	14.9	0.12	21.8	17.4	11.7	16.3	4.9	**87.0**
2005	13.4	0.17	22.4	5.3	10.6	15.8	17.0	**84.7**
2006	11.3	0.15	22.0	17.6	11.9	15.7	11.4	**90.0**
2007*	14.0	0.19	22.5	14.5	12.1	14.5	12.6	**90.3**
Share								
2007*	15%	0%	25%	16%	13%	16%	14%	**100%**
Annual change								
06/07*	23%	25%	2%	–17%	2%	–8%	10%	**0.3%**

[1] Condensing power includes conventional condensing power, peak gas turbine power and gas engines.

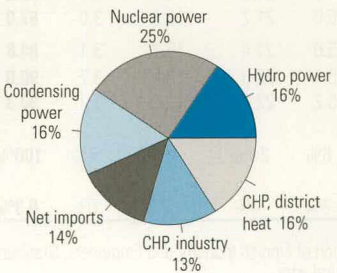
Sources: Finnish Energy Industries, Finnish Wind Power Association and Statistics Finland/Environment and energy

Electricity supply 1970–2007

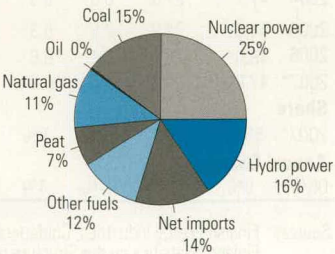


Electricity supply 2007

By mode of production



By source



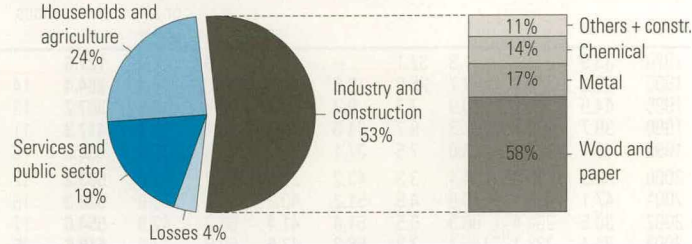
Total electricity supply in 2007 was 90.3 TWh.

Electricity consumption by sector, TWh

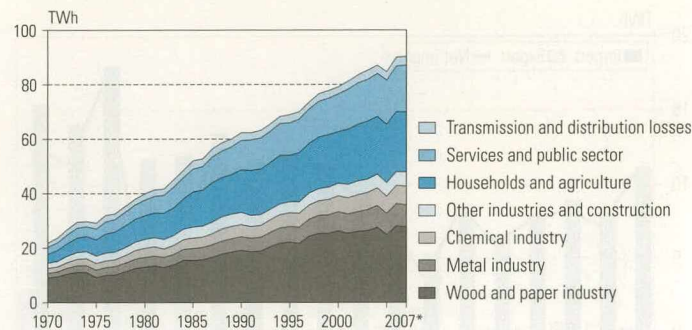
	Industry and construction					Households and agriculture	Services and public sector	Transm. and distrib. losses	**Total**
	Total	Wood and paper	Metal	Chemical	Others				
1970	14.5	9.0	1.8	1.8	1.9	3.3	2.5	1.5	**21.8**
1975	17.1	9.2	2.7	2.4	2.7	6.0	3.9	2.2	**29.2**
1980	23.3	13.0	3.6	3.4	3.3	8.6	5.7	2.3	**39.9**
1985	27.8	15.4	4.4	3.8	4.1	12.8	8.4	3.1	**52.0**
1990	33.1	19.1	5.0	4.5	4.5	15.6	10.8	2.8	**62.3**
1991	32.0	18.6	5.0	4.2	4.1	16.5	11.2	2.6	**62.3**
1992	32.3	18.9	5.1	4.4	4.0	16.7	11.4	2.8	**63.2**
1993	34.2	20.5	5.3	4.6	3.8	17.2	11.5	2.7	**65.5**
1994	36.2	21.8	5.5	4.9	3.9	17.8	11.7	2.6	**68.3**
1995	37.0	22.2	5.7	5.0	4.1	17.1	11.9	3.0	**68.9**
1996	36.9	21.7	6.0	5.1	4.2	18.0	12.4	2.7	**70.0**
1997	40.2	24.4	6.2	5.2	4.4	18.2	12.6	2.5	**73.6**
1998	41.8	25.3	6.7	5.4	4.4	19.0	13.1	2.8	**76.6**
1999	42.3	25.4	6.8	5.6	4.5	19.3	13.4	2.8	**77.8**
2000	43.8	26.3	7.0	5.9	4.6	19.0	13.8	2.6	**79.2**
2001	43.3	25.4	7.0	5.9	4.9	20.2	14.7	2.9	**81.2**
2002	44.6	26.1	7.2	6.2	5.1	20.8	15.2	2.9	**83.5**
2003	45.2	26.4	7.7	6.3	4.9	21.3	15.3	3.4	**85.2**
2004	47.1	27.5	8.0	6.5	5.0	21.2	15.8	3.0	**87.0**
2005	44.0	24.9	7.8	6.3	5.0	21.4	16.2	3.1	**84.8**
2006	48.0	28.1	8.1	6.6	5.1	22.0	16.8	3.2	**90.0**
2007*	47.8	27.7	8.0	6.9	5.2	22.1	17.2	3.2	**90.3**
Share									
2007*	53%	31%	9%	8%	6%	24%	19%	4%	**100%**
Annual Change									
06/07*	0%	–1%	–1%	4%	2%	0%	2%	0%	**0.3%**

Sources: Finnish Energy Industries, Confederation of Finnish Industry and Employers, Statistics Finland/Statistics on the Structure of Industry

Electricity consumption by sector 2007



Electricity consumption by sector 1970–2007

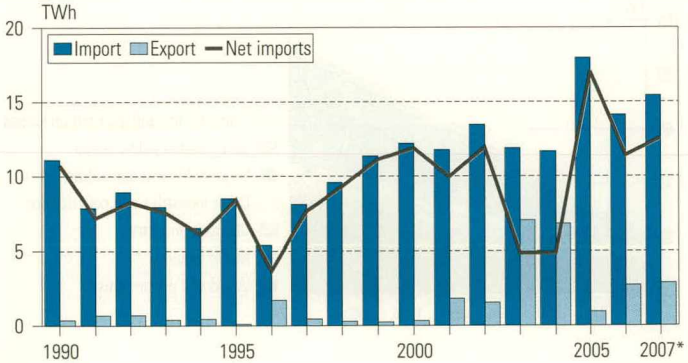


Energy sources in electricity generation, PJ

	Hydro power	Nuclear energy	Hard coal	Oil	Natural gas	Peat	Other fuels	Net imports of electr.	**Total**	CO_2 emis-sions
1970	33.9	–	41.8	32.1	–	..	17.9	1.9	**127.6**	..
1980	36.4	72.3	102.7	26.8	12.6	..	29.2	4.4	**284.4**	14
1985	44.0	196.1	60.9	7.7	9.7	8.9	22.7	17.0	**367.2**	13
1990	38.7	197.8	61.3	9.7	24.8	17.2	29.1	38.7	**417.3**	11
1995	46.1	197.8	65.0	7.5	37.1	36.3	36.6	30.3	**456.6**	13
2000	52.3	235.4	54.4	3.3	43.2	21.5	50.3	42.8	**503.2**	12
2001	47.1	238.4	70.8	4.5	51.2	40.3	50.2	35.9	**538.3**	16
2002	38.5	233.4	88.3	5.5	51.4	41.4	53.3	42.9	**554.6**	17
2003	34.4	238.1	145.7	7.2	68.2	47.6	60.9	17.5	**619.5**	25
2004	53.9	238.0	124.1	3.9	58.0	41.9	65.5	17.5	**602.8**	21
2005	48.9	243.9	37.1	3.2	47.1	25.4	60.9	61.3	**527.8**	11
2006	41.3	240.0	117.5	3.3	58.3	43.0	68.8	41.0	**613.2**	21
2007*	51.0	245.4	104.0	2.5	46.5	47.1	58.9	45.2	**600.7**	18

Source: Finnish Energy Industries, Statistics Finland

Imports and exports of electricity 1990–2007



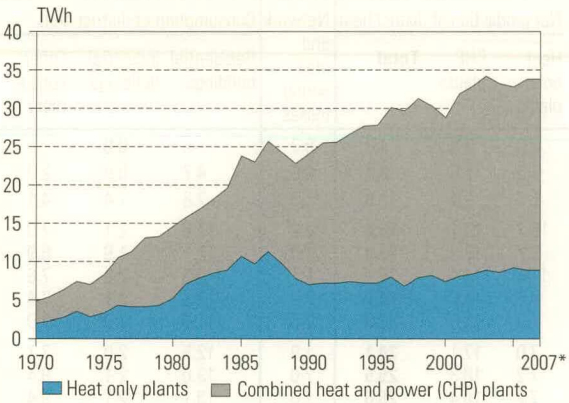
Source: Finnish Energy Industries

Production and consumption of district heat, TWh

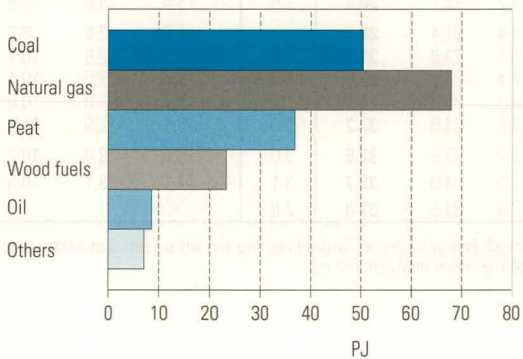
	Net production of district heat			Network and measuring losses	Consumption of district heat			
	Heat only plants	CHP plants	**Total**		Residential buildings	Industrial buildings	Other consumers	**Total**
1970	2.0	2.8	**4.8**	0.3	..	0.6	..	**4.5**
1975	3.3	5.0	**8.2**	0.6	4.7	0.9	2.0	**7.7**
1980	5.2	9.4	**14.6**	1.3	7.8	1.4	4.1	**13.3**
1985	10.7	13.1	**23.8**	2.2	12.6	2.1	7.0	**21.7**
1986	9.7	13.3	**23.0**	2.0	12.1	1.9	6.9	**21.0**
1987	11.3	14.4	**25.7**	2.1	13.5	2.2	7.8	**23.6**
1988	9.7	14.5	**24.2**	2.0	12.8	2.1	7.4	**22.2**
1989	7.8	15.0	**22.8**	2.0	11.9	1.9	7.0	**20.9**
1990	7.0	17.1	**24.1**	1.9	12.5	2.0	7.7	**22.3**
1991	7.2	18.3	**25.5**	2.0	13.0	2.1	8.4	**23.5**
1992	7.2	18.4	**25.6**	2.0	13.1	2.1	8.4	**23.6**
1993	7.4	19.3	**26.7**	2.0	13.9	2.3	8.5	**24.6**
1994	7.2	20.5	**27.6**	2.3	14.0	2.4	8.9	**25.3**
1995	7.2	20.6	**27.8**	2.4	14.3	2.7	8.4	**25.4**
1996	8.0	22.1	**30.0**	2.5	15.3	2.9	9.4	**27.6**
1997	6.8	22.9	**29.7**	2.6	15.1	2.9	9.1	**27.1**
1998	7.9	23.4	**31.3**	2.7	15.6	3.0	9.9	**28.5**
1999	8.2	22.1	**30.4**	2.6	15.4	3.0	9.5	**27.8**
2000	7.4	21.4	**28.8**	2.5	14.9	2.6	8.8	**26.3**
2001	8.1	23.8	**31.9**	2.7	16.2	2.9	10.1	**29.1**
2002	8.4	24.5	**32.9**	2.9	16.6	3.0	10.4	**30.0**
2003	8.9	25.3	**34.1**	3.0	17.4	3.0	10.9	**31.2**
2004	8.6	24.6	**33.2**	3.0	16.1	2.9	11.2	**30.3**
2005	9.2	23.6	**32.8**	3.0	16.6	3.0	10.2	**29.8**
2006	8.9	24.9	**33.7**	3.1	17.1	3.1	10.5	**30.7**
2007*	7.8	23.5	**31.3**	2.8	..	..	..	**28.5**

Sources: Finnish Energy Industries/District heating and since 1995 also Association of Finnish Local and Regional Authorities

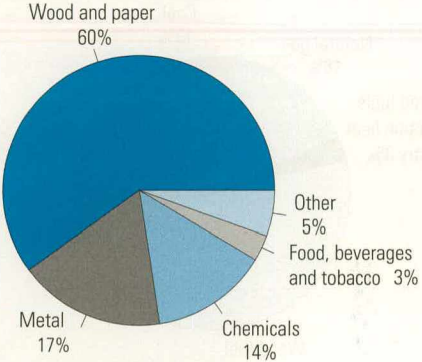
Production of district heat 1970–2007



Fuel consumption in production of district heat and combined production of district heat and electricity 2007

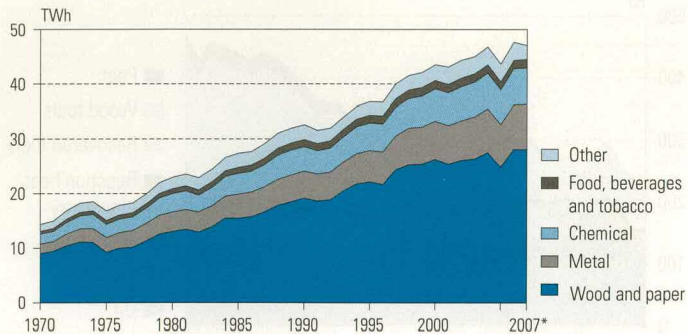


Electricity consumption by branch of industry 2007

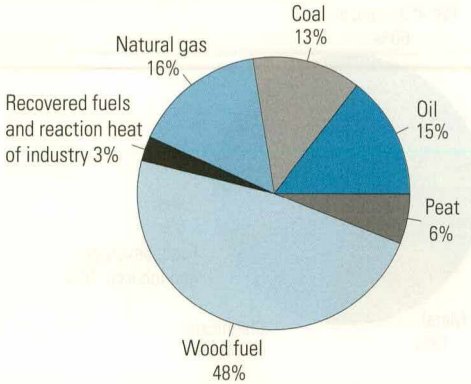


Total electricity consumption by industry in 2007* was 47.1 TWh.

Electricity consumption by branch of industry 1970–2007

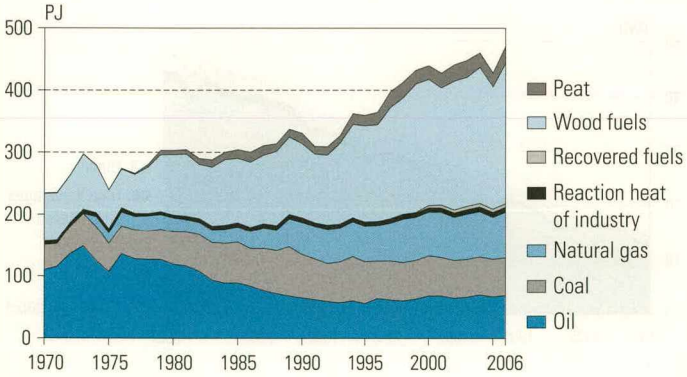


Fuel consumption in industry 2006



Total fuel consumption in industry in 2006 was 471 PJ.

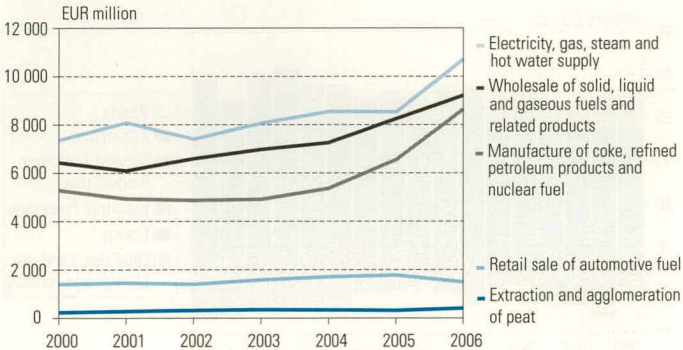
Fuel consumption in industry 1970–2006



Enterprises in energy sector in 2006

	Number of enterprises	Turnover, EUR mil.	Employees	Staff expenses, EUR mil.
Wholesale of solid, liquid and gaseous fuels and related products	153	9 210	1 839	104
Electricity, gas, steam and hot water supply	613	10 824	13 796	708
Extraction and agglomeration of peat	582	415	1 379	51
Retail sale of automotive fuel	940	1 499	6 278	153
Manufacture of coke, refined petroleum products and nuclear fuel	11	8 637	2 814	157

Turnover of enterprises in energy sertor 2000–2006



Source: Statistics Finland, Financial statements of enterprises.

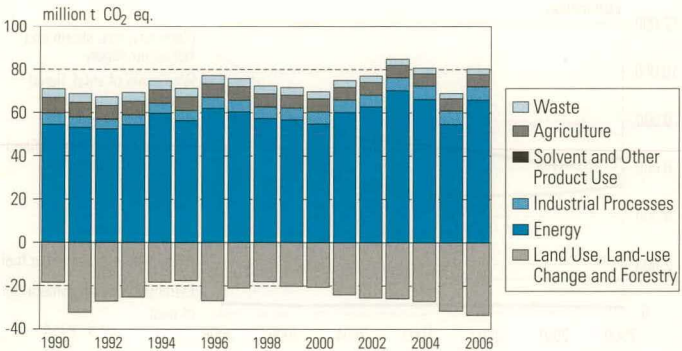
Greenhouse gas emissions 1990 and 2006 (1 000 tonnes)

The gases included in the Kyoto Protocol

	Carbon dioxide (CO_2)		Methane (CH_4)		Nitrous oxide (N_2O)		F-gases (HFCs, PFCs, SF_6) CO_2 eq.	
	1990	2006	1990	2006	1990	2006	1990	2006
Fuel combustion	53 068	64 057	15	14	3	5	–	–
Fugitive emissions from fuels	226	113	1	3	0	0	–	–
Industrial processes	3 300	3 867	0	1	5	5	94	804
Solvent and other product use	116	61	0	0	0	0	0	0
Agriculture*	0	0	102	88	16	12	0	0
Waste	0	0	182	111	1	1	0	0
Total	**56 710**	**68 098**	**299**	**216**	**25**	**22**	**94**	**804**
Emissions, million tonnes of CO_2 equivalent	56.7	68.1	6.3	4.5	7.9	6.9	0.1	0.8

* CO_2 emissions from agricultural soils are reported in land use, land use change and forestry.

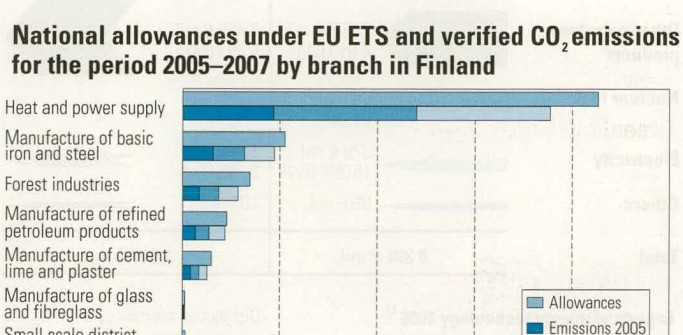
Greenhouse gas emissions 1990–2006



Source: Statistics Finland, Greenhouse Gas Inventory

Finland's greenhouse gas emissions 1990–2007

National allowances under EU ETS and verified CO_2 emissions for the period 2005–2007 by branch in Finland



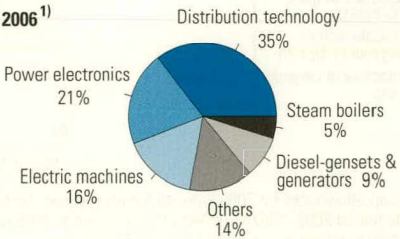
Emission allowances for 2006 were 45.5 million tonnes (estimated from the total allowances for the period 2005–2007). Verified CO_2 Emissions in 2005 were 33.1 million tonnes, in 2006 44.6 million tonnes and in 2007 42.8 million tonnes.

Source: Energy Market Authority

Imports and exports of energy and energy technology 2007

	Imports	Exports
Coal	381 € mil. 5 825 000 t	0.5 € mil. 3 000 t
Natural gas	689 € mil. 4 529 mil.m^3	
Crude oil	4 694 € mil. 12 221 000 t	
Other petroleum products	2 099 € mil. 4 819 000 t	3 459 € mil. 6 493 000 t
Nuclear fuel	63 € mil. 67 tU	
Electricity	376 € mil. 15 264 GWh	108 € mil. 2 795 Gwh
Others	89 € mil.	10 € mil.
Total	**8 391 € mil.**	**3 577 € mil.**

Exports of energy technology 2006 [1)]



[1)] Data for 2007 are not available for the time being, as the SITC nomenclature has changed.

Energy imports 2007

		Russia	Great Britain	Norway	Sweden	Kazak-stan	Other countries	Total Amount	Total Value mil. €
Hard coal	1 000 t	4 811	7	17	1	13	403	**5 252**	**280**
Coke	1 000 t	..	..	..	..	..	0	**573**	**101**
Natural gas	mil. m^3	4 529	–	–	–	–	0	**4 529**	**689**
Crude oil	1 000 t	9 074	1 567	462	0	564	554	**12 221**	**4 694**
Motor gasoline	1 000 t	2	–	3	0	–	83	**88**	**46**
Middle distillates	1 000 t	2 175	0	47	202	90	141	**2 655**	**1 141**
Heavy fuel oil	1 000 t	32	6	183	341	–	225	**787**	**222**
LPG	1 000 t	9	0	128	8	44	0	**189**	**90**
Other petroleum prod.	1 000 t	595	60	12	28	–	323	**1 018**	**558**
Methanol	1 000 t	415	0	–	0	–	0	**415**	**87**
MTBE	1 000 t	77	0	–	0	–	5	**82**	**43**
Peat	1 000 t	2	–	–	41	–	17	**60**	**2**
Nuclear fuel	tU	13	–	–	20	–	34	**67**	**63**
Electricity	GWh	10 171	–	202	2 970	–	1 921	**15 264**	**376**
Value	mil. €	5 935	664	383	306	289	712		**8 391**

Import of wood fuels is excluded.

Source: Board of Customs /Foreign Trade Statistics

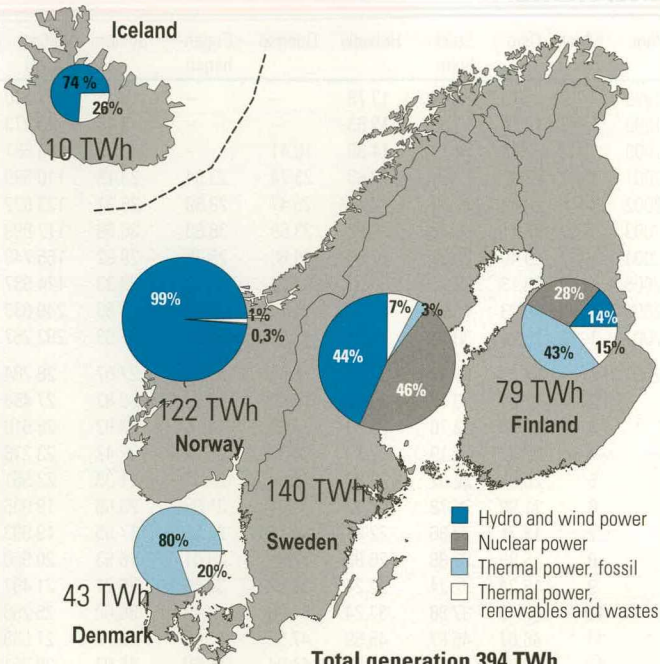
Energy exports 2007

		Sweden	United States	Germany	Great Britain	Belgien	Other countries	Total Amount	Total Value mil. €
Coke	1 000 t	0	–	–	–	–	3	**3**	**1**
Motor gasoline	1 000 t	780	1 033	114	–	8	486	**2 421**	**1 309**
Jet fuel	1 000 t	13	–	–	–	0	0	**13**	**7**
Middle distillates	1 000 t	1 075	67	358	522	0	547	**2 569**	**1 324**
Heavy fuel oil	1 000 t	15	–	–	–	0	447	**462**	**117**
LPG	1 000 t	1	–	–	0	–	1	**2**	**1**
Other petroleum prod.	1 000 t	155	22	62	19	127	641	**1 026**	**701**
Peat	1 000 t	57	1	20	0	2	33	**117**	**10**
Electricity	GWh	2 664	–	–	–	–	131	**2 795**	**108**
Value	mil. €	1 186	592	283	281	225	1 010		**3 577**

Export of wood fuels is excluded.

Source: Board of Customs /Foreign Trade Statistics

Electricity generation in nordic countries 2006

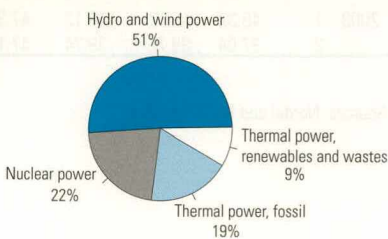


Total generation 394 TWh

Electricity consumption in nordic countries 2006, TWh

Sweden	146
Norway	123
Finland	90
Denmark	36
Iceland	10
Total	**405**

Source: Nordel Annual Report 2006

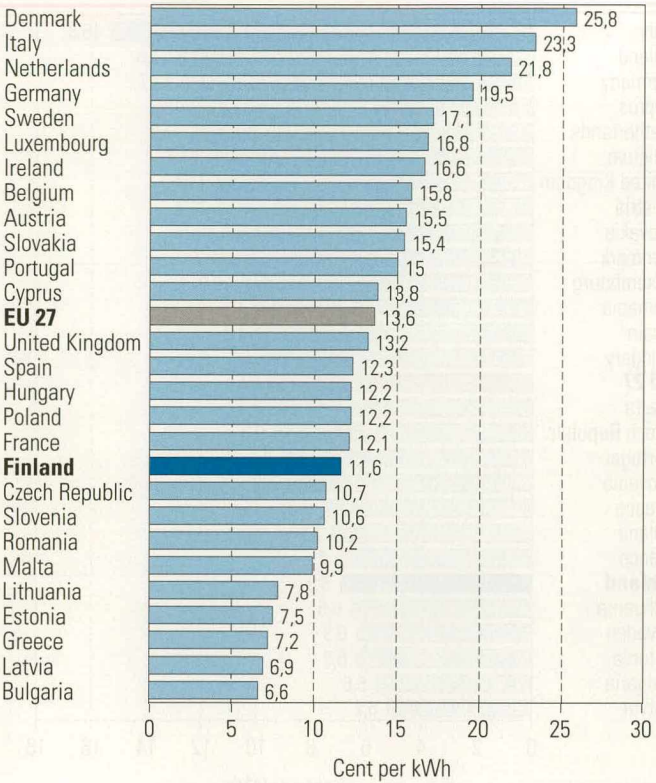


Spot prices of the Nordic Power Exchange NordPool by price area, € /MWh

Year	Month	Oslo	Stock-holm	Helsinki	Odense	Copen-hagen	System	Volume (GWh)
1998	1–12	13.73	13.54	13.78	–	–	13.78	57 240
1999	1–12	13.10	13.58	13.65	–	–	13.46	75 373
2000	1–12	12.06	14.24	14.88	16.41	–	12.75	95 687
2001	1–12	23.08	22.86	22.83	23.74	23.54	23.15	110 589
2002	1–12	26.57	27.62	27.28	25.47	28.59	26.91	123 622
2003	1–12	37.11	36.49	35.30	33.68	36.80	36.69	117 899
2004	1–12	29.40	28.08	27.68	28.80	28.35	28.92	165 748
2005	1–12	29.13	29.76	30.53	37.23	33.80	29.33	174 937
2006	1–12	49.23	48.12	48.57	44.18	48.53	48.59	249 833
2007	1–12	25.78	30.25	30.01	32.40	33.01	27.93	292 257
2007	1	27.70	27.47	27.46	25.66	27.30	27.57	28 784
	2	27.67	30.13	30.08	28.47	30.59	28.82	27 458
	3	23.76	23.70	23.70	24.98	24.14	23.82	26 616
	4	22.37	22.19	22.19	24.33	25.42	22.42	23 276
	5	20.93	22.02	22.02	24.54	24.07	21.38	22 561
	6	21.98	26.78	26.92	31.64	31.09	23.68	19 935
	7	12.71	22.36	22.37	24.16	26.55	17.65	19 993
	8	5.36	26.88	26.88	27.85	29.01	16.53	20 950
	9	18.24	32.24	32.24	33.37	34.60	25.21	21 497
	10	35.45	37.88	37.24	51.06	49.43	36.60	25 298
	11	46.07	45.87	45.59	47.56	47.15	45.72	27 538
	12	46.96	45.70	43.63	44.94	46.69	45.97	28 351
2008	1	45.32	46.12	46.12	47.34	47.11	45.84	29 673
	2	37.04	39.72	39.74	47.13	43.69	38.54	27 590

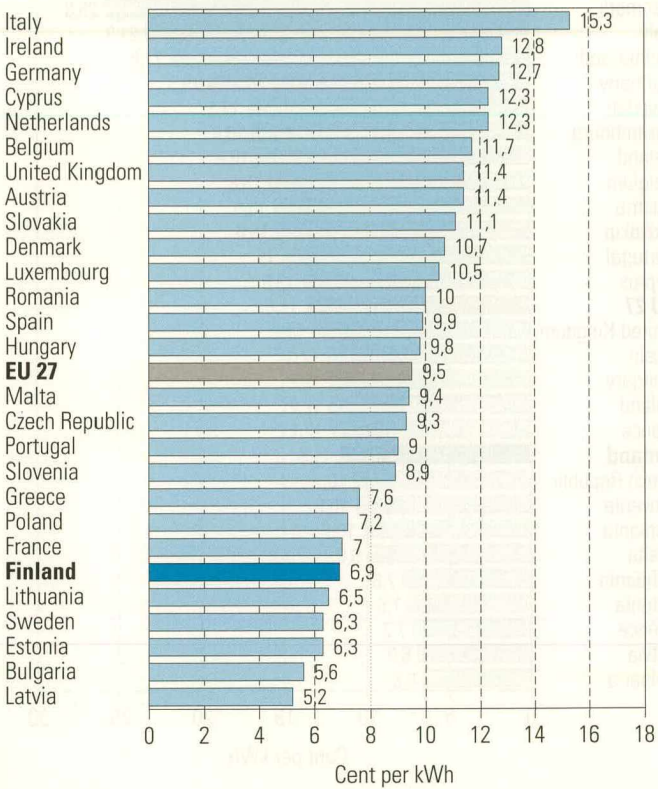
Sources: Nordel and EL-EX NordPool

Electricity prices for households on 1st of January 2007



Households annual consumption of 3 500 kWh of which 1 300 kWh is overnight (standard dwelling of 90m²). Prices include taxes.

Electricity prices for industry on 1st of January 2007



Electricity prices to industrial consumers with annual consumption of 2 000 MWh, maximum demand of 500 kW and annual load of 4 000 hours. Prices include taxes.

Total energy consumption of in EU and some of the OECD countries, PJ

	1985	1990	1995	2000	2003	2004	2005
Germany	15 040	14 840	14 150	14 240	14 520	14 570	14 460
France	8 540	9 490	10 040	10 820	11 320	11 490	11 530
United Kingdom	8 530	8 840	9 130	9 640	9 650	9 710	9 720
Italy	5 590	6 410	6 750	7 220	7 660	7 740	7 820
Spain	3 170	3 740	4 280	5 140	5 610	5 880	6 010
Poland	..	4 190	4 190	3 800	3 840	3 870	3 930
Netherlands	2 550	2 810	3 070	3 170	3 370	3 450	3 390
Belgium	1 840	1 980	2 110	2 390	2 340	2 300	2 300
Sweden	1 960	1 970	2 110	2 010	2 140	2 220	2 160
Czech Republic	..	1 980	1 700	1 690	1 820	1 820	1 880
Romania	0	2 570	1 970	1 550	1 680	1 660	1 640
Finland	1 120	1 200	1 210	1 360	1 560	1 580	1 450
Austria	990	1 040	1 120	1 190	1 360	1 370	1 420
Greece	990	930	1 010	1 180	1 260	1 280	1 310
Hungary	..	1 200	1 080	1 050	1 110	1 100	1 170
Portugal	520	710	820	1 010	1 060	1 100	1 120
Bulgaria	1 840	1 170	980	780	810	790	830
Denmark	820	750	850	820	860	840	820
Slovakia	..	880	740	730	780	760	810
Ireland	370	440	460	590	620	660	630
Lithuania	..	670	360	300	380	380	360
Slovenia	..	230	250	270	300	300	310
Estonia	..	410	220	190	230	240	230
Luxembourg	130	150	140	150	180	200	200
Latvia	..	330	200	160	180	190	200
Cyprus	..	..	80	100	110	100	100
Malta	..	20	30	30	40	40	40
EU 27	**..**	**..**	**69 100**	**71 680**	**73 060**	**75 700**	**75 840**
Canada	..	8 750	9 700	10 550	10 430	11 250	11 390
Japan	..	18 650	20 920	22 130	21 800	22 280	22 210
United States	..	80 710	87 440	96 470	95 840	97 380	97 980
OECD Total	**..**	**189 390**	**..**	**222 980**	**225 870**	**230 500**	**232 270**

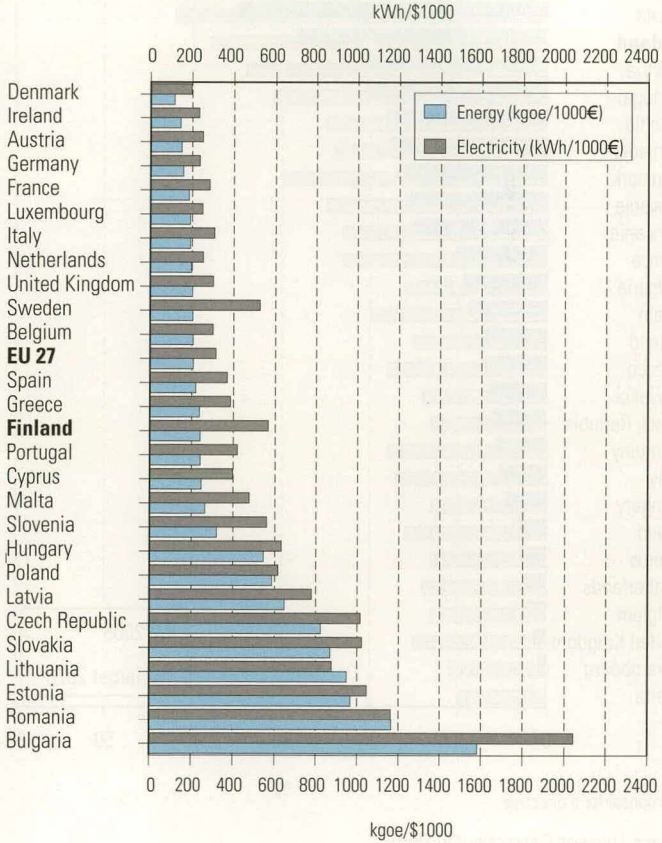
Source: Eurostat, IEA /Energy Balances of OECD Countries 2004–2005

Electricity consumption in EU and some of the OECD countries, TWh

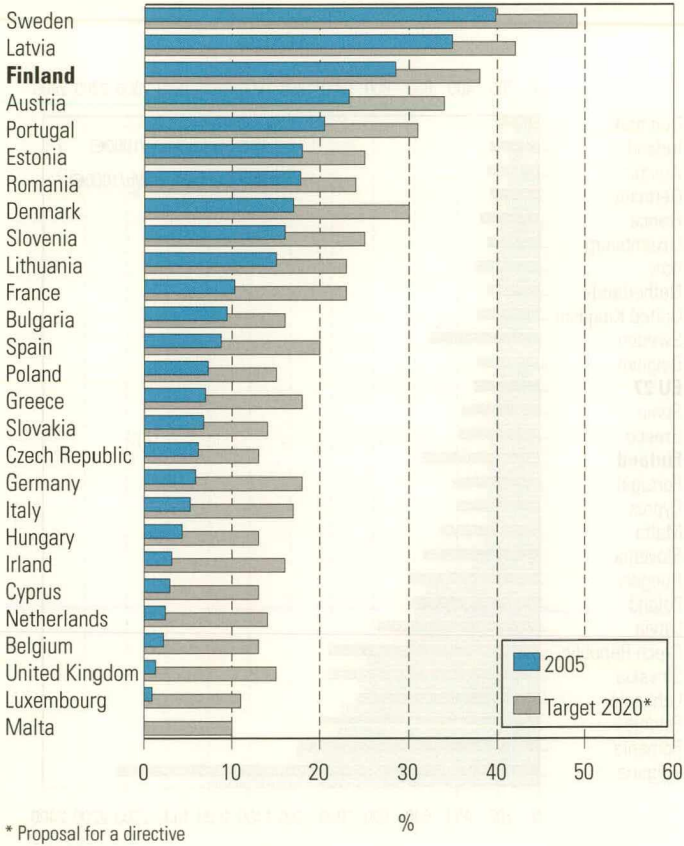
	1985	1990	1995	2000	2003	2004	2005
Germany	424.6	446.5	452.6	482.6	509.3	513.3	517.5
France	252.9	301.9	342.6	385.1	408.2	419.6	422.5
United Kingdom	242.1	274.4	293.9	329.5	336.2	339.0	345.2
Italy	173.7	214.1	237.7	272.5	291.0	295.0	300.4
Spain	102.8	125.8	140.9	188.5	220.0	230.7	242.2
Sweden	113.6	120.3	124.6	128.7	129.4	130.4	132.4
Netherlands	61.5	73.5	83.1	97.9	100.5	103.1	104.5
Poland	92.1	95.8	89.6	96.7	98.2	99.8	98.8
Finland	48.5	58.9	65.3	75.4	80.9	83.1	80.9
Belgium	48.4	58.0	68.4	77.5	79.7	80.6	80.2
Austria	37.0	42.7	46.0	51.8	55.2	56.4	56.8
Czech Republic	43.3	48.2	48.0	49.4	52.4	53.8	55.2
Greece	23.8	28.5	34.1	43.2	48.6	49.7	50.9
Portugal	17.4	23.5	28.8	38.4	43.2	44.7	46.3
Romania	..	54.6	36.4	36.4	37.5	38.7	39.0
Denmark	25.4	29.3	31.2	32.5	32.4	33.0	33.5
Hungary	30.2	31.6	27.7	29.4	31.4	31.8	32.3
Bulgaria	..	35.3	28.7	28.7	25.1	24.9	25.7
Slovakia	21.5	23.4	21.7	22.0	23.0	24.0	22.9
Ireland	9.8	11.9	14.8	20.2	22.5	23.0	24.4
Slovenia	..	9.7	9.4	10.5	12.0	12.6	12.7
Lithuania	..	12.0	6.3	6.2	7.1	7.6	7.9
Luxembourg	3.8	4.1	5.0	5.7	6.0	6.4	6.2
Estonia	..	6.8	4.5	5.0	5.6	5.9	6.0
Latvia	..	8.3	4.4	4.4	5.2	5.4	5.7
Cyprus	..	1.8	2.2	3.0	3.6	3.7	4.0
Malta	..	0.9	1.3	1.6	1.8	1.8	1.7
EU 27	**..**	**2 142.1**	**2 248.9**	**2 248.9**	**2 666.0**	**2 717.5**	**2 756.0**
Canada	..	802.5	925.6	925.6	1 001.4	1 031.5	1 051.9
Japan	..	447.6	484.3	484.3	544.9	551.7	558.5
United States	..	2 923.9	3 371.0	3 371.0	3 860.3	3 919.9	4 046.6
OECD Total	**..**	**7 055.4**	**7 950.1**	**7 950.1**	**9 338.8**	**9 551.2**	**9 800.2**

Source: Eurostat, IEA /Energy Statistics of OECD Countries 2004–2005

Consumption of energy and electricity per GDP-unit in EU countries 2005



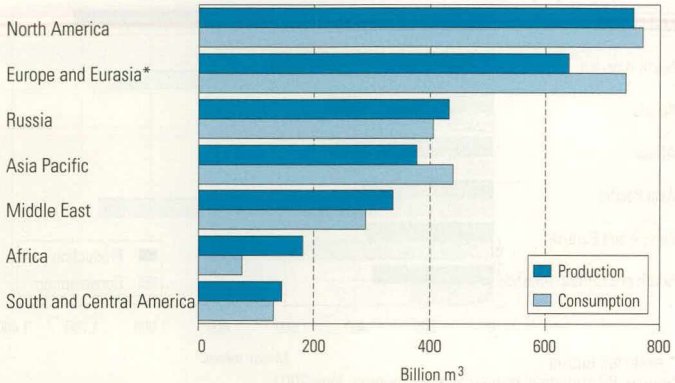
Renewable energy as a proportion of electricity consumption in 2005, and the target for 2020



* Proposal for a directive

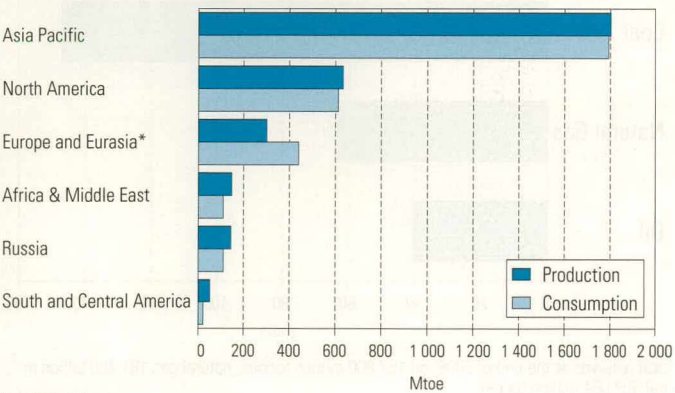
Source: European Commission/DG TREN

Gas production and consumption by region in 2006



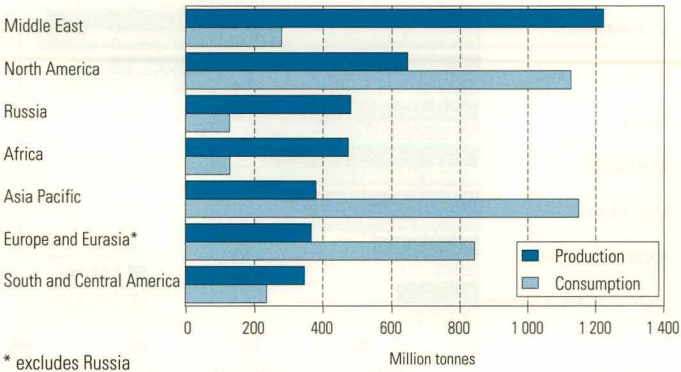
* excludes Russia
Source: BP statistical rewiev of world energy June 2007

Coal production and consumption by region in 2006



* excludes Russia
Source: BP statistical rewiev of world energy June 2007

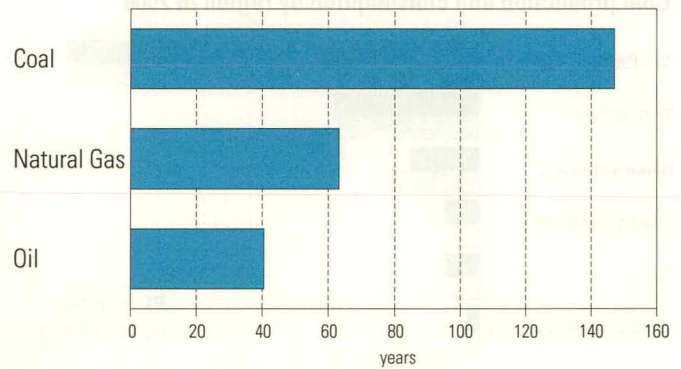
Oil production and consumption by region in 2006



* excludes Russia

Source: BP statistical rewiev of world energy June 2007

World oil, natural gas and coal reserve sufficiency



Total reserves at the end of 2006: oil 152 800 million tonnes, natural gas 181 460 billion m^3, coal 909 064 million tonnes.

Source: BP statistical rewiev of world energy June 2007

Net heat contents and densities of energy sources

Fuels	Unit	Net heat content		Density
		GJ	MWh	t/m^3
Crude oil	t	41.8	11.6	0.86
Heavy fuel oil	t	41.1	11.4	0.98
Light fuel oil	t	42.7	11.9	0.85
Diesel fuel	t	42.8	11.9	0.85
Kerosines	t	43.3	12.0	0.80
Other kerosines	t	43.1	12.0	0.81
Naphtha	t	44.3	12.3	0.70
Motor gasolines	t	43.0	11.9	0.75
Aviation gasolines	t	43.7	12.1	0.71
LPG	t	46.2	12.8	0.51
Refinery gases	t	51.9	14.4	
Hard coal	t	25.5	7.1	
Coke	t	29.3	8.1	
Natural gas	1 000 m^3 (0°C)	36.0	10.0	
Blast furnace gas	1 000 m^3	3.8	1.1	
Coke oven gas	1 000 m^3	16.7	4.6	
Black liquor	t (dry matter)	11.7	3.3	
Wood pellets	t	16.5–17.6		
Bark	t	5–11		
Sawdust	t	6–10		
Forest residue chips	t	6–9		
Whole tree chips	t	7–10		
Chips	loose m^3	3.3	0.9	
Milled peat	t	10.1	2.8	0.32
Sod peat	t	12.3	3.4	0.38

Conversion factors between energy units

	toe	MWh	GJ	Gcal
toe	1	11.63	41.868	10
MWh	0.086	1	3.6	0.86
GJ	0.02388	0.2778	1	0.2388
Gcal	0.1	1.163	4.1868	1

Example: 1 toe (tonne of oil equivalent) = 11.63 MWh

Prefix

k = kilo	$= 10^3$	= 1 000
M = mega	$= 10^6$	= 1 000 000
G = giga	$= 10^9$	= 1 000 000 000
T = tera	$= 10^{12}$	= 1 000 000 000 000
P = peta	$= 10^{15}$	= 1 000 000 000 000 000

Carbon dioxide factors for some fuels

	g CO_2 /MJ
Motor gasolines	73.6
Diesel fuel	73.6
Light fuel oil	74.1
Heavy fuel oil	78.8
Jet fuel	73.2
LPG	65.0
Other oils	71.3–79.2
Hard coal	94.6
Coke	108.0
Natural gas	55.04
Milled peat	105.9
Bark, wood fuel	109.6
Industrial wood residue	109.6
Black liquor	109.6

Note

Hydro power, wind power and imported electricity have been made commensurate with fuels according to directly obtained electricity (at the efficiency ratio of 100 per cent) and nuclear power at the efficiency ratio of 33 per cent.

Calculation method for heating energy

Net heating energy for buildings is calculated by subtracting boiler losses from fuels according to the following default efficiencies:

Small combustion of wood	55%
Peat	60%
Coal	60%
Heavy fuel oil	83%
Light fuel oil	78%
Natural gas	90%
District heating	100%
Electric heating	100%

Sources: Technical Research Centre of Finland (VTT) and Tampere University of Technology.

Explanation of symbols

..	Data not available
–	Magnitude zero
0	Magnitude less than half of unit employed
*	Preliminary
----------	Break in the time series

Energy statistics by Statistics Finland

Preliminary energy statistics

(Energiaennakko)

Preliminary data on energy statistics.
Data published in March.

Energy statistics publication and EnergyCD

(Energiatilasto ja EnergiaCD)

Annual publication containing detailed basic statistics on energy in Finland. Includes data on energy consumption and supply, consumption of electricity and district heat, foreign trade, energy prices and emissions etc.

Energy in Finland

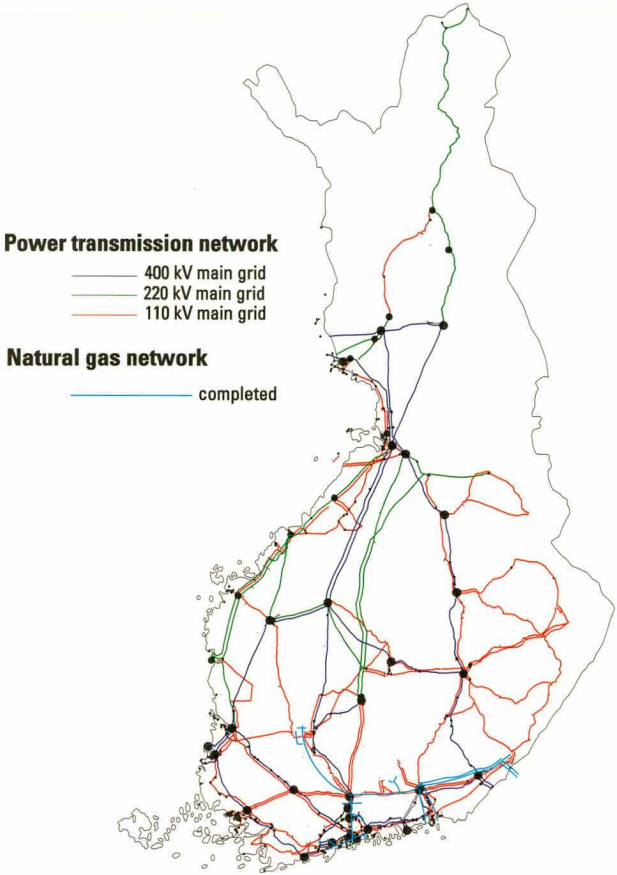
Statistical pocketbook on energy statistics.

Internet www.stat.fi/energy

(www.tilastokeskus.fi/energia)

The updated statistics on consumption of hard coal, energy supply, consumption and prices as well as production of electricity and heat. Latest tables and figures.

Power transmission and natural gas networks 2007



Statistics Finland
Sales Services
P.O.Box 4 C
FI–00022 STATISTICS FINLAND
Tel. +358 9 1734 2011
Fax. +358 9 1734 2500
sales@stat.fi
www.stat.fi

ISSN 1457–0491
ISBN 978–952–467–854–4
Product number 3055
E